Amendments to the Drawings:

A replacement sheet for Figure 6 is included with this amendment.

REMARKS

Claims 1-16 are active and pending in the present application. According to the present Office Action, Figure 6 is objected to as are claims 2, 10, 14 and 15. Claim 1-13 and 16 stand rejected. In response, claims 1 and 16 have been amended, a replacement drawing sheet has been provided, and claim 2 has been canceled.

Objection to the Drawings

A replacement sheet for Figure 6 is included with this amendment. Connecting lines have been added to indicate the connectedness of the loop filter 620 with the phase detector 610 and the VCO 10. These added connecting lines are not new subject matter because the original description of Figure 6 in paragraph [0027] details how the loop filter 620 filters out undesired noise of the phase detector output signal and applies it to the tuning input of the VCO.

Objection to the Claims

Claims 2 and 10 are objected to because of what the Examiner perceives as informalities. Applicants urge that the original language of claims 2 and 10 properly describe features of the claimed tunable oscillator.

As per claim 2, "each of the varactor pairs comprises two serially coupled varactors each having a first node coupled to the tuning voltage input and a second node coupled to its respective bias voltage input." This claim language correctly describes, as shown in Figure 2, that there are two varactor pairs (110 and 120). Each of these varactor pairs comprises two serially coupled varactors (for example varactor pair 110 includes varactors VC1 and VC2). Each of these varactors has a first node coupled to the tuning voltage input and a second node coupled to its respective bias voltage input. In Figure 2, it is depicted that one node of VC1 is coupled to the tuning voltage input through resistor 135 and its other node is coupled with Vcm1. Similarly, one node of VC2 is coupled with the tuning voltage input through resistor 130 and its other node is coupled with Vcm2. The other varactor pair is arranged in an analogous fashion.

Applicants urge that the original language of claim 2 (and similar language of claim 10) properly recite the features of the claimed tunable oscillator and respectfully request the Examiner to reconsider and withdraw the objection to these claims.

Rejections under 35 USC §102

Claims 1, 2, 3, 5, 6, 7, 9, 10, 11, 13 and 16 stand rejected under 35 USC §102 as being anticipated by Friedman et al. (U.S. Pat. No. 6,292,065). In response, the features of claim 2 have been incorporated into claim 1 and claim 2 has been canceled. Similarly, the features of claim 2 have been incorporated into claim 16 as well.

As amended, claim 1 recites a number of features not disclosed by Friedman. For example, the first and second varactor pairs are arranged with an inductor to generate a signal having a frequency responsive to a tuning voltage applied to the tuning voltage input. Additionally, each of the varactor pairs comprises two serially coupled varactors, wherein each varactor in a varactor pair has a first node coupled to the tuning voltage input and a second node coupled to its respective bias voltage input.

Applicants urge that Friedman does not identically disclose these features recited in the claims. More particularly, Friedman does not disclose a tuning voltage input that is coupled to all four varactors as recited in claim 1. The detailed operation of the VCO of Friedman is described by Friedman with reference to FIG. 1 of that patent. In particular, a positive voltage input 118 is connected to a varactor pair and a negative voltage input 120 is connected to another varactor pair. The varactors are coupled with respective tank circuits (114, 115) to provide an oscillating signal.

In direct contrast to claim 1, Friedman includes two different tuning voltage inputs one of which is connected to some of the varactors and the other of which is connected to the other varactors. Even if one argues that the two different tuning voltage inputs could hypothetically be connected together, the resulting imaginary circuitry of Friedman would not identically disclose the features recited in claim 1. Friedman explicitly recognizes that a common mode signal at these inputs has a canceling effect (col. 4, 25-28). Thus, the resulting hypothetical circuitry would not be arranged to generate a signal having a frequency responsive to a tuning voltage as recited in claim 1.

Additionally, the circuitry of Friedman is not identical to the recitation of amended claim 1 because a varactor pair of Freidman is not comprised of two serially coupled varactors. For example, varactors 126 and 122 are connected in parallel between their respective tuning voltage inputs and a tank circuit 115 while varactors 128 and 124 are connected in parallel between their respective tuning voltage inputs and another tank circuit 114. Therefore, contrary to claim 1,

Friedman does not identically disclose "wherein each of the varactor pairs comprises two serially coupled varactors", as recited in claim 1.

Because Friedman does not identically disclose every feature recited in claim 1, as amended, it does not provide the factual basis required to support a rejection under 35 USC §102. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102 of claim 1, and its dependent claims 3, 5, 6, and 7, are respectfully requested.

Claim 5 recites a specific arrangement of a pair of capacitors with respect to the nodes of the varactors. In particular, a first capacitor is coupled between a first node of the inductor and the first node (i.e., the one coupled to the tuning voltage input) of one varactor of a pair while a second capacitor is coupled between a second node of that inductor and the first node of the other varactor of that pair. None of the capacitors disclosed by Friedman identically disclose this specific coupling arrangement recited in claim 5. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102 of claim 5 are respectfully requested.

Claim 9 recites that "the first varactor pair is biased such that its capacitance varies substantially linearly with the tuning voltage over a first portion of the tuning range" and that "the second varactor pair is biased such that its capacitance varies substantially linearly with the tuning voltage over a second portion of the tuning range." Applicants urge that Friedman does not identically disclose these recited claim features and, therefore, does not provide the factual basis to anticipate claim 9 as meant under 35 USC §102. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102 of claim 9, and its dependent claims 10, 11 and 13, are respectfully requested.

For at least the reasons provided above with respect to amended claim 1, Applicants urge that Friedman does not identically disclose all the features recited in claim 10. Also, for at least the reasons provided above with respect to claim 5, Applicants urge that Friedman does not identically disclose the features recited in claim 13. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102 of these claims are respectfully requested.

Claim 16 has been amended to incorporate the features originally recited in claim 2. Thus, for at least the reasons provided above with respect to claim1, reconsideration and withdrawal of the rejection under 35 USC §102 of claim 16 are respectfully requested.

Rejections under 35 USC §103

Claims 4, 8 and 12 stand rejected under 35 USC §103 as unpatentable over Friedman in view of Kwek (U.S. Pat. No. 6,774,736) and Chang (U.S. Pat. No. 6,885,275).

With respect to claims 4 and 12, the Examiner admits that Friedman does not disclose conventional resistor elements on the tuning voltage inputs but contends that Kwek teaches a noise-dampening resistor for a control input and concludes that it would have been obvious to add such a resistor to the circuitry of Friedman because by doing so "the system of Friedman et al. would be enhanced."

Claim 4 depends from claim 1 and, therefore, incorporates all the limitations recited in claim 1. As detailed above, Friedman does not disclose or suggest a number of features recited in claim 1. The circuitry of Kwek also does not disclose or suggest these features missing from Friedman. Accordingly, the combination of Friedman and Kwek does not disclose or suggest all the features recited in claim 4 and, therefore, does not support a prima facie case of obviousness under 35 USC §103. Applicants, therefore, respectfully request reconsideration and withdrawal of the rejection under 35 USC §103 of claim 4.

Claim 12 depends from claim 9 and, therefore, incorporates all the limitations recited in claim 9. As detailed above, Friedman does not disclose or suggest a number of features recited in claim 9. The circuitry of Kwek also does not disclose or suggest these features missing from Friedman. Accordingly, the combination of Friedman and Kwek does not disclose or suggest all the features recited in claim 12 and, therefore, does not support a prima facie case of obviousness under 35 USC §103. Applicants, therefore, respectfully request reconsideration and withdrawal of the rejection under 35 USC §103 of claim 12.

With respect to claim 8, the Examiner admits that Friedman does not disclose "a differential to single ended converter for the output" but contends that Chang discloses this feature and concludes that it would have been obvious to modify the circuitry of Friedman based on Chang because doing so "allows for the differential structure VCO with a correct output signal as required by the system designer."

Applicants disagree with the Examiner's characterization of Chang. The circuit of Figure 15 of Change provides a differential Vout signal. Chang, however, recognizes that single-ended output

might be desired. The solution Chang teaches in column 27 is to select one or the other of the differential signals as the output.

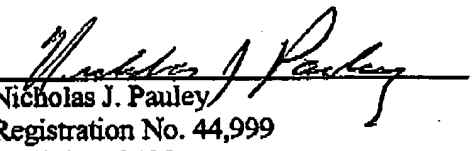
Claim 8 does not merely recite providing a single-ended signal but, instead, recites a differential-to-single ended amplifier and, more specifically, that this amplifier has its differential input coupled across the inductor. Chang does not disclose or suggest an amplifier or any other circuitry coupled to a differential signal across an inductor. Chang merely selects one signal and ignores the other. Accordingly, even if Friedman was modified in view of the teachings of Chang, the resulting circuitry would not include a differential-to-single ended amplifier having its differential input coupled across the inductor. Thus, neither Friedman or Chang, either individually or in combination, disclose or suggest every feature recited in claim 8. This combination, therefore, does not support a prima facie case of obviousness under 35 USC §103. Accordingly, reconsideration and withdrawal of the rejection of claim 8 are respectfully requested.

In view of the above amendments and remarks, Applicants believe that claims 1 and 2-16 are in condition for allowance and passage of this case to issue is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 17-0026 and please credit any excess fees to such deposit account.

Respectfully submitted,

Dated: September 13, 2005

By: 

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